

Nanostructured InGaP Solar Cells, Phase I

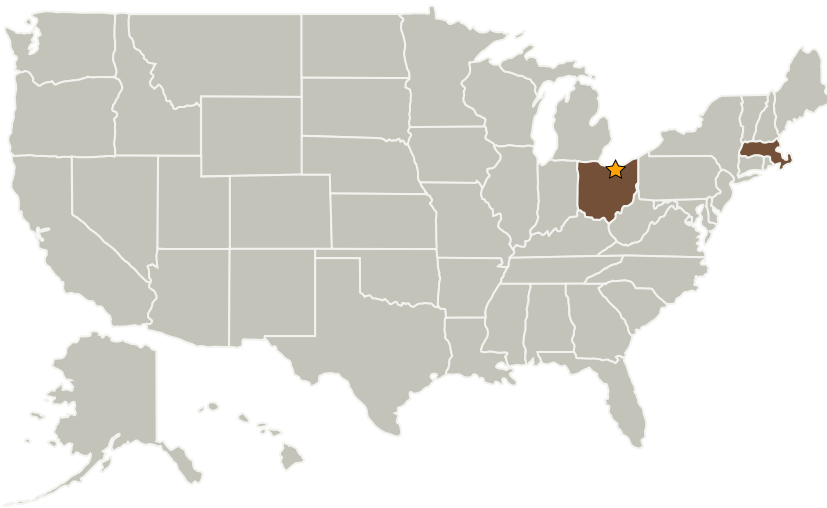
Completed Technology Project (2008 - 2008)



Project Introduction

The operating conditions of conventional multijunction solar cells are severely limited by the current matching requirements of serially connected devices. The goal of this SBIR program is to enhance the operating tolerance of high efficiency III-V solar cells by employing nanostructured materials in an advanced device design. By using quantum wells and quantum dots embedded in a higher band gap barrier material, solar cell devices that avoid the limitations of current matching can be constructed. This Phase I effort will focus on quantifying the trade-offs between short circuit current and open circuit voltage in InGaP / InGaAs nanostructures. Ultimately, the technical approach employed in this program has the potential of achieving conversion efficiencies exceeding 50% with a single p-n junction device, enabling improved overall performance and lower manufacturing costs than existing technologies.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Kopin Corporation	Supporting Organization	Industry	Taunton, Massachusetts



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Massachusetts

Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Roger E Welser

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.1 Power Generation and Energy Conversion
 - └ TX03.1.1 Photovoltaic